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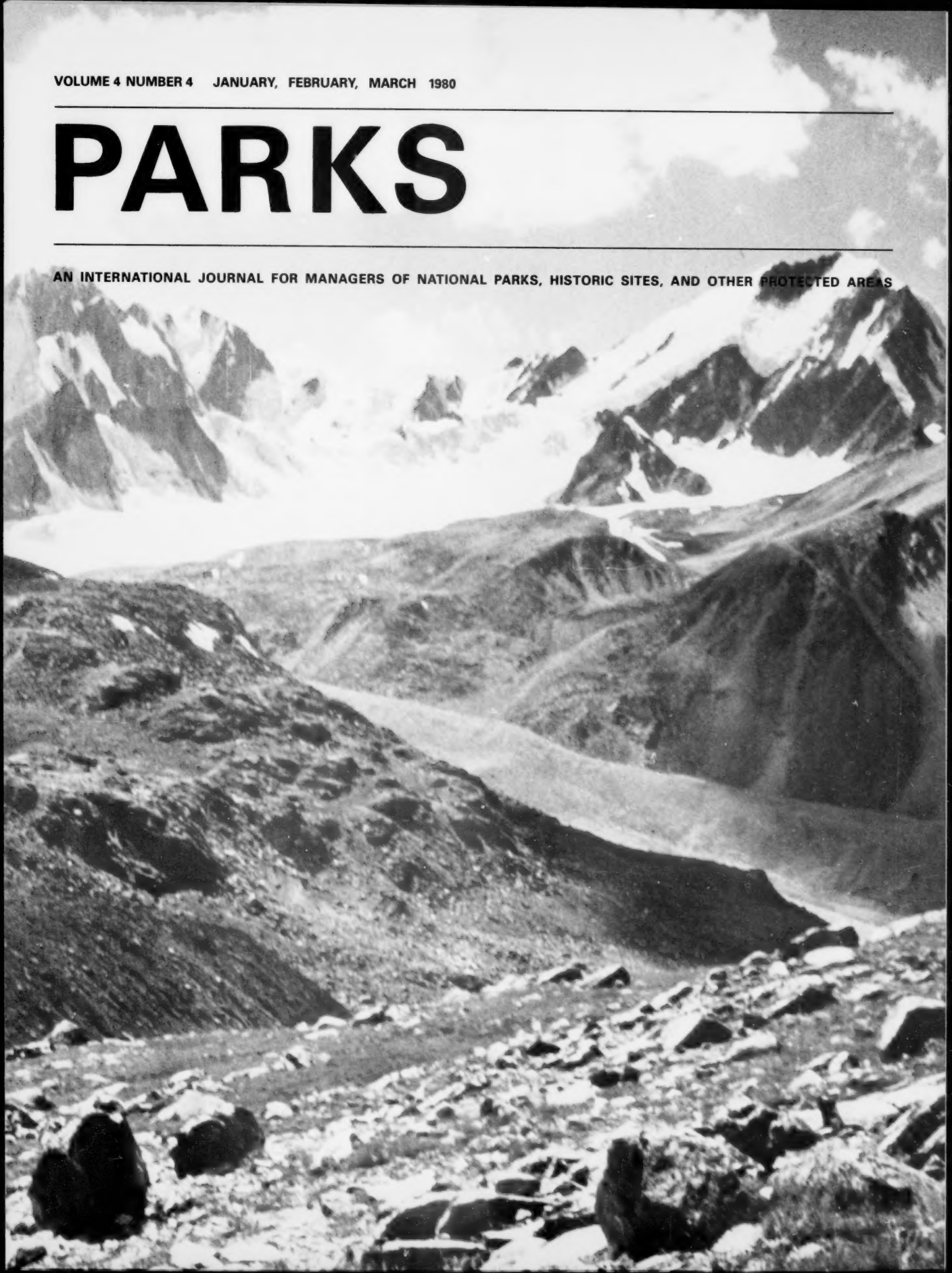
PARKS

AN INTERNATIONAL JOURNAL FOR MANAGERS OF NATIONAL PARKS, HISTORIC SITES, AND OTHER PROTECTED AREAS



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Volume 4, Number 4 January, February, March 1980

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Front and back covers: Rugged and inaccessible, the lofty Pamir Mountains in Afghanistan's Wakhan Corridor between Pakistan and the USSR could be an outstanding national park. For the present they are the location of a new wildlife reserve, the home of Marco Polo sheep and Siberian ibex. Photo: Dr. Ronald Petocz

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David F. Hales

Does the World Heritage Convention Really Work?

Does the World Heritage Convention really work? Is it protecting natural and cultural sites of outstanding universal value? How can the operations of the World Heritage Committee be made more effective?

Those were the key questions I tried to answer when, as outgoing Chairman of the Committee, I reviewed its operations during the past year.

This article is an expanded version of the remarks I made at the Committee's third meeting, held in Cairo and Luxor, Egypt, in October. While it obviously is based on my experience as the United States delegate to the first three meetings of the Committee and as its Chairman for the past year, it does not necessarily reflect the views of the Committee or the United States.

A significant number of ratifications in 1979 brought to 48 the number of states adhering to the Convention and resulted in the increase of membership in the World Heritage Committee — established by the Convention to manage its work on behalf of the party states — to its full complement of 21 nations. A brief glance at the list of party states, as well as the Committee membership, shows a strong, positive worldwide interest in the protection and conservation of mankind's cultural and natural heritage. With some significant exceptions, such as the Soviet Union and the Peoples Republic of China, the Committee has a well-rounded representation of the peoples of the world.

In a real sense, 1979 was the first full year of active operation for the Committee. With the help of UNESCO representatives, the Committee aggressively sought the best opportunities to expand the World Heritage List and to provide expertise to nations which are seriously committed to the identification and protection of that part of the world's heritage found within their borders. During 1979, US$220,000 was granted by the Committee to member states for training, technical assistance and emergency assistance.

The first emergency grant was made to Nepal to shore up and protect the foundations of the Swayambhu Temple.

Perhaps the most significant "first" in 1979 was the first formal dedication of a site inscribed on the World Heritage List. This ceremony, which took place in Canada on the banks of the Nahanni River, in Nahanni National Park, marked the end of the Convention's formative stage and the beginning of its active implementation as nations take concrete action to implement their commitment to the protection of heritage resources.

The past year's work was climaxed by the Committee's third meeting, at which 45 new entries were made on the World Heritage List, bringing the total to 57.

Third meeting of the World Heritage Committee was held 22-26 October, 1979. Egypt's First Lady, Her Excellency Mrs. Jihan Essadat, is shown addressing the opening session at Arab Socialist Union in Cairo. Left to right: Dr. Gerard Bolla, UNESCO's Deputy Assistant Director General for Culture and Communications; His Excellency Dr. Mansour Hassan, Egypt's Minister of Presidency, Information and Culture; Mrs. Essadat; Dr. Shehata Adam, President of the Organization of Egyptian Antiquities, the Committee Chairman for 1979-1980; Dr. Michel Batisse, UNESCO's Deputy Assistant Director General (Science).

The outgoing Committee Chairman, David Hales (left) and the new Chairman, Dr. Shehata Adam, chat with Egypt's First Lady during the opening exercises at Cairo.

Though this number seems small, it is significant. All 57 sites are among the world's leading examples of natural and cultural heritage. The number also represents the expenditure of much time and attention: in surveys and documentation, inspection and debate — by experts in the countries concerned, by the Committee and its supporting staff at UNESCO, and by the technical advisers at ICOMOS and IUCN.

There was considerable activity during the past year. The Convention is being implemented remarkably well in some areas. In other areas, however, problems exist.

One of the more mundane but potentially serious problems is the relationship of staff resources, including the nongovernmental organizations, to the workload generated by the member states. This workload is very heavy indeed, and I am concerned because of the vast increase in the number of nominations being received for inscription and the increasing complexity of the work itself as various provisions of the Convention become operational. It is the current hope of the Committee that an adequate number of staff members will be made available to the secretariat by its parent organization, UNESCO, at the earliest possible time. For the interim period, October 1979 to December 1980, the Committee approved expenditure of US$70,000 for temporary assistance to the secretariat.

This arrangement is less than satisfactory to several of the member states represented on the Committee, and the level of support from UNESCO must be addressed in the near future.

A far more serious problem is the increasing imbalance between natural and cultural influences on the Committee.

The imbalance in the number of natural and cultural sites on the World Heritage List does not concern me greatly, except that I note in passing that it reflects, among other factors, a long and discriminating review of natural sites by IUCN and by the Committee that was not matched for cultural sites.

A more serious indication of the imbalance is the lack of representation on the Committee and the Committee's Bureau of natural expertise. Only three of the 21 members of the Committee sent to the Committee meeting representatives who were knowledgeable about natural resources, and only one member of the Bureau has natural area expertise.

This imbalance, if continued into the future, will undermine the credibility of the Bureau and the Committee in their evaluation of sites nominated to the World Heritage List under the natural criteria and could render the Convention ineffective.

This problem was recognized by the Committee and a number of actions to help reduce the imbalance were considered. In the end, however, it remains the responsibility of each member state to ensure that the objectives of the Convention concerning the protection and integration of natural and cultural resources are carried out.

I believe that UNESCO and the Committee members will take action to improve the balance between natural and cultural representation and that we will see this problem diminish in the near future. If it does not, however, I think it is conceivable that those nations which consistently emphasize both cultural and natural values may begin to reevaluate their support of the Convention.

The actions taken by the Committee in Egypt were significant. The items approved brought the October 1979-December 1980 budget up to a total of US$832,234. This breaks down to $149,234 for preparatory assistance, $165,400 for technical cooperation, $204,700 for training, $170,000 for emergency use, $36,900 for promotional activities, $42,000 for technical program support by ICOMOS and IUCN, and, of course, the $70,000 already mentioned for temporary assistance to the secretariat.

The principal business of the Committee was to consider nominations to the World Heritage List. As I noted earlier, 45 nominations recommended by the Bureau were approved for inscription. These sites are listed elsewhere in this issue of PARKS.

There were five other nominations. The Committee decided not to accept two sites, Zembra and Zembretta Islands National Park in Tunisia and Madeleine Island in Senegal, and deferred action on three other nominations. One of these was Ichkeul National Park in Tunisia, which was deferred until adequate protection of the migratory avifauna found there can be assured. This subject was discussed at length in the last issue of PARKS, Volume 4(3).

Sites approved for inscription on the List at this meeting of the Committee and those approved last year at the Committee's second meeting will be published as an official World Heritage List. This List will be issued every two years. The Committee also decided that appendices will list the "World Heritage in Danger" and the properties for which international technical cooperation or emergency assistance has been granted.

The Committee set up working groups on criteria and on financial matters and decided on procedures for the eventual deletion from the List of properties which fall below the standards that they had to meet for inscription. These procedures will be incorporated into the "Operational Guidelines," as will the amendments of criteria for the inclusion of both

New Entries in the World Heritage List

At its Third meeting, held in Cairo and Luxor, Egypt, 22-26 October 1979, the committee decided to enter in the World Heritage List the following 45 properties:

Name of property	State Party
Fasil Ghebbi, Gondar region	Ethiopia
Ancient City of Damascus	Syrian Arab Republic
Auschwitz concentration camp	Poland
Bialowieza National Park	Poland
Forts and Castles, Volta Greater Accra, Central and Western Regions	Ghana
Medina of Tunis	Tunisia
Site of Carthage	Tunisia
Amphitheatre of El Jem	Tunisia
Ngorongoro Conservation Area	Tanzania
Boyana Church	Bulgaria
The Madara Rider	Bulgaria
Thracian tomb of Kazanlak	Bulgaria
Rock-hewn churches of Ivanovo	Bulgaria
Urnes Stave Church	Norway
Bryggen	Norway
Virunga National Park	Zaire
Tikal National Park	Guatemala
Antigua Guatemala	Guatemala
Dinosaur Provincial Park	Canada
Kluane National Park, Wrangell-St. Elias National Monument	Canada & USA
Grand Canyon National Park	USA
Everglades National Park	USA
Independence Hall	USA
Mont St.-Michel and its Bay	France
Chartres Cathedral	France
Palace and Park of Versailles	France
Vezelay, Church and Hill	France
Decorated grottoes of the Vezere Valley	France
Memphis and its Necropolis, the Pyramid fields from Giza to Dahshur	Egypt
Ancient Thebes with its Necropolis	Egypt
The Nubian monuments from Abu Simbel to Philae	Egypt
Islamic Cairo	Egypt
Abu Mena	Egypt
Rock drawings in Valcamonica	Italy
Old City of Dubrovnik	Yugoslavia
Stari Ras and Sopocani	Yugoslavia
Historical complex of Split with the Palace of Diocletian	Yugoslavia
Plitvice Lakes National Park	Yugoslavia
Lake Ohrid (part in Yugoslavia)	Yugoslavia
Tchogha Zanbil	Iran
Persepolis	Iran
Meidan-e Shah Esfahan	Iran
Sagarmatha National Park	Nepal
Kathmandu Valley	Nepal
Natural and Culturo-Historical Region of Kotor	Yugoslavia

natural and cultural properties. These revisions are to be considered by the Bureau at its next session.

Finally, the Committee considered that it would be desirable to examine nominations at its fourth session within a well-defined national context and expressed the hope that each party country would make available to the Committee before its next meeting a list of those properties which it intends to nominate to the World Heritage List during the next five to ten years.

As I mentioned earlier, 1979 in many ways marks the end of the Convention's formative stage and the beginning of its active implementation. From now on, the effectiveness of the Convention will be judged not on the basis of what the Committee says, but by what it does. It is no longer sufficient for the Committee to point to its statement of criteria for world significance, for its wisdom will be judged by the World Heritage List itself.

It seems likely that the level of activity under the Convention will increase and that the reception around the world of the objectives and goals of the Convention will be encouraging. Those problems which do exist are not generated by the Convention itself but result from the operations of the Committee. The Committee, therefore, has the ability to solve those problems. With continued support from those throughout the world who wish to protect and cherish the world's heritage, I believe it will find those solutions.

David F. Hales is Deputy Assistant Secretary for Fish and Wildlife and Parks, U.S. Department of the Interior. For the 1978-1979 year he served as Chairman of the World Heritage Committee.

Update on the World Heritage Convention

As of January 1980 the list of States having deposited an instrument of ratification or acceptance stood at 49. The four States to adhere most recently were:

Denmark	July 25, 1979	R
Guinea	March 18, 1979	R
Honduras	June 8, 1979	R
Nicaragua	December 17, 1979	A

See PARKS, Volume 4(1) April-May-June 1979 for a list of the 45 States which earlier adhered to the convention.

Norman Myers

Tropical Forests, a treasure house under siege

Tropical moist forests constitute the richest biome (or ecological region) on earth. Their ecological diversity is legend. They could well harbor as many as half of the earth's 5-10 million species.

Yet this biome is less understood than any other on earth. Scientists are only just beginning to unravel some of its complexities. Of the myriad species living in these forests, probably only one sixth have yet been identified. We now know more about patches of the moon's surface than we do about many tracts of these forests. In 1972, a tribe was discovered in the forests of the Philippines, separated from the outside world by a mere 25 kilometres of forest and apparently isolated for many millenia.

At the same time, tropical moist forests are being misused and overused more rapidly than is any other biome. In the view of many observers—switched-on scientists, not "wildlife eco-nuts"—the end of the century could see much of the biome reduced to degraded remnants, if not eliminated altogether.

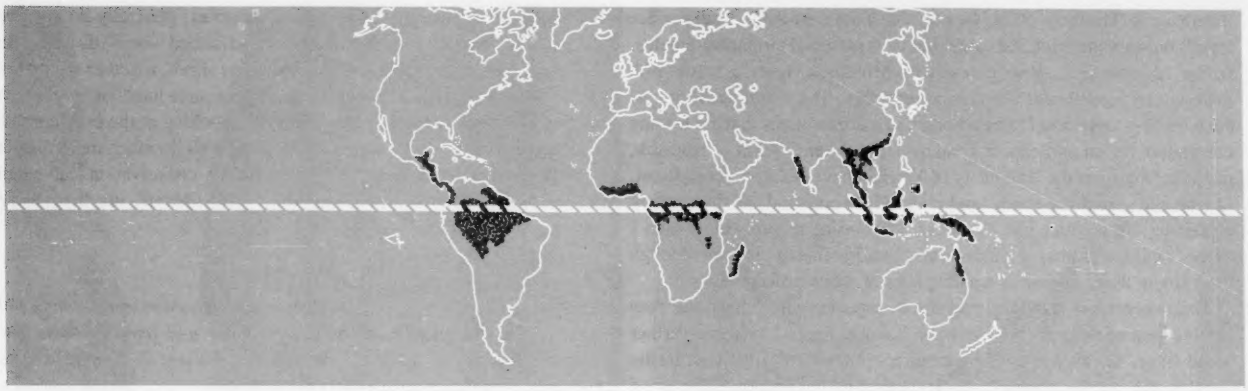
According to the Food and Agriculture Organization, tropical moist forests still cover about 9.35 million km². This amounts to a mere one twentieth of the earth's land surface. Despite their small extent, these forests contain four-fifths of the earth's vegetation on land. The Asia/Pacific region comprises around 2.54 million km² (of which 1.87 million is in South-East Asia); Latin America totals rather over 5 million km², the great bulk of it Amazonia; and Africa possesses 1.75 million km², of which at least 1 million are located in Zaire.

Of the total forest spread, it is now reckoned that as much as 150,000 km² are disappearing each year. This works out at a rate of 25 hectares per minute. But an "average rate," for the entire biome does not really say much in terms of what is actually happening on the ground. The lowland Philippines forests may well be gone by 1985; and something the same could apply to Nigeria, Ghana and possibly Ivory Coast; likewise the forest remnants in Central America. Most of Indonesia's accessible forests, allocated to multi-national timber corporations, could well be overlogged by the end of the century, or over-run by shifting cultivators. Much the same holds good for parts of Colombia, Peru and extensive areas of eastern Amazonia in Brazil. At the same time Peru and Brazil are recognizing the tremendous need for conservation action and are leading the way in the establishment of large new national parks. In Central Africa, however, where low human densities and an abundance of mineral resources leave far less incentive to convert forests into cash, there could well be large expanses of little disturbed forest surviving by the end of the century; and, because of its remoteness, the same could apply to western Amazonia in Brazil. The overall outcome, then, is likely to be patchy.

This is not to say, of course, that maintenance of tropical moist forests should be considered an absolute end in itself. When these forests are exploited their products generate many benefits, such as foreign-exchange earnings, for the countries concerned—and they could do so on a sustainable-yield basis. Thus, a question of trade-offs arises: safeguarding of forests should be perceived within a context of overall development needs. The central issue is not "let's save the forests, whatever the cost." Rather, we should ask whose needs are served by safe guarding forests, and at what cost to whose opportunities for a better life in other ways? In other words, should we seek to maintain forests as an objective in itself, or should we rather do what we can within a framework of trying to enhance long-term human welfare in all manner of ways?

It is not unrealistic to suppose that, within the foreseeable future, the fundamental modification of tropical moist forests could lead to the disappearance of as many as 1 million species. In fact, it is likely that, right now, at least one species is disappearing in these forests each day. Before many years go by, we could face a situation where one species becomes extinct each hour.

Arabuko-Sokoke coast forest clearance. Photo: David Keith Jones



Tropical moist forests still cover more than 9 million square kilometers of the earth's surface but in general they are being irrationally exploited, and thus are fast disappearing. Experts reckon as much as 150,000 square kilometers are lost each year —about 25 ha per minute. Since these forests contain four-fifths of the earth's land vegetation, and a large percentage of the existing species of plants and animals, loss of the forests will have very serious consequences, particularly for the countries where they are found.

Extinction of a species represents an irreversible loss of a unique resource. This type of environmental impoverishment differs from other more common types such as pollution. When water bodies are treated as a garbage bin or the atmosphere is fouled, we can, if we change our minds about the process, clean up the pollution. But when a species disappears, it is gone for good. And all too often, that could turn out to be for bad.

Species offer many utilitarian benefits of immediate use to mankind. These pragmatic purposes enable conservation of species to rank as a form of forest use that merits consideration alongside other kinds of use such as timber exploitation. Throughout the world, people increasingly consume food, take medicines, and employ industrial materials that owe their production to genetic resources and other startpoint materials from animals and plants from tropical moist forests. Given the needs of the future, species can be reckoned among society's most valuable raw materials. Any reduction in the diversity of resources narrows society's scope to respond to new problems and opportunities. To the extent that we cannot be certain what needs may arise in the future, it makes sense to keep our options open. This conservation rationale applies to the earth's endowment of species more than to almost any other category of natural resources.

In fact, the problem of disappearing species could eventually be recognized as one of the great "sleeper-issues" of the late 20th century. It is difficult to visualize a challenge more profound in its implications, yet less appreciated by the general public, than that entailed in the wholesale elimination of species and their genetic resources.

Species are enormously valuable. For example, tropical moist forests contain many wild relatives of modern food crops. These crops, the refined products of genetic engineering, require constant "topping-up" with fresh germ plasm in order to resist new types of diseases and pests, environmental stresses, and the like, as well as to increase productivity and nutritive content. During this century genetic resources from the wild have saved a number of important crops including bananas, sugarcane, cocoa and coffee. To give an idea of economic values involved, groundnuts worldwide have suffered from leaf-spot disease — a problem that proved surmountable only through resistant varieties from wild forms found in the rainforests of Amazonia. The annual value of eliminating the disease is estimated, by the International Crop Research Institute for the Semi-Arid Tropics, at $500 million. Similar large-scale benefits could be documented for rubber, coconut and palm oil.

Tropical moist forests also constitute the earth's main repository of drug-yielding plants. At least 70 percent of all plants known to possess anti-cancer properties, 3,000 species in all, exist in the tropical moist forests. It is on these grounds that the U.S. National Cancer Institute believes that the wide spread elimination of tropical moist forests could represent a serious setback to the anti-cancer campaign.

In addition, tropical moist forests supply material for a category of drugs that is of growing importance — those that serve as contraceptives and abortifacients. The rhizomes of a climbing vine, the Mexican yam, yield virtually the world's entire supply of diosgenin, from which a variety of sex hormone combinations are prepared, including "the pill." By the mid-1970's, the world was using up to 180 tons of diosgenin per year; by 1985, the amounts could rise to as much as 500 tons and by 1995 to 3000 tons, if the contraceptive needs of all women at risk are to be met. Right now, 80 million pills are used each day. Current sales of Mexican yam materials for contraceptive pills amount to $7 million per year; when chemical compounds have been made up, the figure rises to $70 million, and when crosscounter sales for final products are totalled, the figure amounts to $700 million. In view of this end-product turnover in the commercial marketplace, and in view of the fact that the yam has not been persuaded to grow anywhere but in tropical moist forests, the Mexican government decided in 1974 to increase its revenue from this natural resource by increasing its prices. As a result, one kg of diosgenin, that cost $11.25 in 1970, cost $152 in 1976.

A third category of products derives from tropical moist forests — specialist materials for industrial use. The range is wide. From South-East Asia's forests alone comes latex, gums, camphor, dammar, resins, dyes and ethereal oils.

One group of industrial products is especially important, oils and lubricants. Many forest plants bear oil-rich seeds, e.g. the babassu palm, the Seje palm, several species of the *Caryocar* genus, and a number of other trees that grow wild in Amazonia. The babassu's fruit contains up to 72 percent oil.

What would be the loss if East Africa's moist forests disappeared within the foreseeable future, as is predicted by many experienced observers?

Let us briefly consider the prospects for the Arabuko-Sokoke Forest between Mombasa and Malindi. A trifling fraction of what was once a forest extending for hundreds of kilometres along East Africa's coast, it has been reduced to 360 km². It is the only known home of the Scop's owl, discovered as recently as 1964, with perhaps 2,600-3,000 individuals in a range of 1,500 km². The forest is also the sole home of the Sokoke pipit and the Clarke's weaver, whose numbers are unknown. In addition, the forest very likely contains a good number of endemic insects, plants, reptiles and other creatures. So significant to science is the Arabuko-Sokoke Forest that a number of scientists have proposed it for a Biosphere Reserve under the UNESCO plan for a global network of outstanding

nature areas. The merit of this view could lie not only in the Arabuko-Sokoke's outstanding scientific value, but in its potential utilitarian benefits. In the Shimba Hills Forest, south of Mombasa, lives a shrub with materials of possible use for anti-cancer drugs. The vine-like *Maytenus buchananii* is considered to be among half a dozen plants that are leading contenders for an anti-cancer breakthrough. After 5 years of research, pharmacologists at the University of Virginia have isolated a compound, Maytansine, from the shrub, and checked its potential: prospects look promising. To produce just 1 gram of Maytansine requires more than 1 tonne (1 million grams) of shrub stems: 2 milligrams of the drug, enough for a single dose, appear as small specks of white powder.

The existence of this localized shrub, together with others that may survive precariously in the Arabuko-Sokoke Forest, raises a further broad issue. IF Maytansine in fact offers potential against cancer, the benefits will accrue primarily to developed-world people. Citizens of Kenya, as of most tropical developing countries, generally do not live long enough to contract cancer and other "advanced world" diseases. So if Kenya takes steps to preserve the *Maytenus* shrub, together with other local plant species, it is in effect offering a "resource handout" to the rich nations — a form of foreign aid in reverse. Looking at the problem this way suggests that the developed world could well do much more than at present to assume its share of the expensive conservation campaign needed to safeguard the planet's spectrum of species, not least those found in tropical moist forests.

Dr. Norman Myers, who lives in Kenya, is a consultant in environmental conservation and widely known as an author and photographer. The foregoing article was adapted from SWARA (Volume 2, Number 1), the Magazine of the East African Wildlife Society.

Jeffrey A. Sayer

Afghanistan's Efforts to Manage Wildlife and Environment

Five wildlife sanctuaries have been established by the government of Afghanistan. This represents a move of international importance since some of the species of birds and animals involved are migratory and others are near extinction in this part of the world. The selection and decision to have these sanctuaries did not happen overnight.

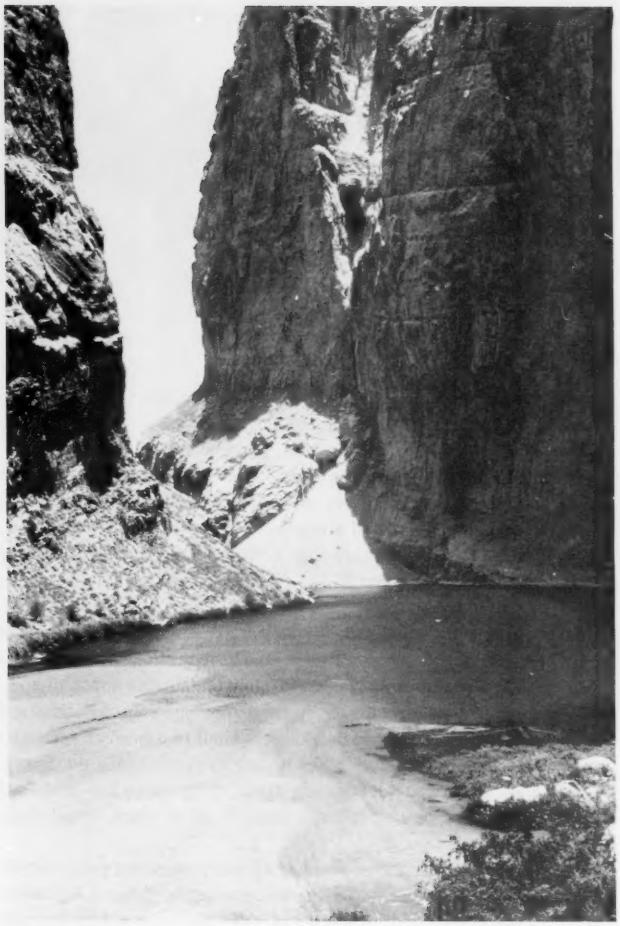
In the early 1970's the government sought assistance from FAO and the World Wildlife Fund to examine the wildlife situation and advise on how best to manage environment and species. Dr. Ronald Petocz, of Alaska, went to Afghanistan as consultant for both organizations during this period and was responsible for surveying and planning the new sanctuaries. With the institution of the sanctuaries the project has now gone into its second phase, which is to assist the government in implementing management plans.

The project will train Afghans in wildlife conservation techniques and aims to set up pilot management programs in two of the sanctuaries. The first of these areas is the saline lake of Ab-i-Estada situated at an elevation of 2000 m in Ghazni province, about 250 km southwest of Kabul. This lake supports a breeding population of up to 10,000 greater flamingos (*Phoenicopterus ruber*), and the most urgent need is to protect this colony against human disturbance and especially egg collecting. The area is an important wintering area for waterfowl and is visited in spring and autumn by tens of thousands of ducks and shorebirds migrating from Russia to the Indian subcontinent. Among these migrants the entire western population of the Siberian crane (*Grus leucogeranus*), which numbers only about 40 individuals (out of a world population of only about 300), visits Ab-i-Estada in autumn and spring on route from their wintering grounds at the Ghana sanctuary in India. The World Wildlife Fund has provided $25,000 for warden accommodation and research facilities at the lake and construction began in April 1979.

The second area chosen for management is the Ajar Valley in the Hindu Kush mountains 200 km northwest of Kabul. The valley was previously a royal hunting reserve but now along with the surrounding mountains it will be given more comprehensive protection. The area has dramatic landscapes; the valley floor is at an elevation of 2,400 m, but nearby peaks reach above 4,000 m. Domestic animals have been excluded for many years and the vegetation has not been subject to the same degree of overgrazing as has much of Afghanistan's range lands. There is a healthy population of ibex (*Capra ibex*) and on a recent visit in mid-winter I saw several hundred forced by snow to descend to the lower slopes of the mountains. A thicket of *Salix* sp. on the valley floor contains the only wild population of Bactrian deer (*Cervus elephas bactrianus*) outside the Soviet Union (a few may still exist on the Afghan side of the river Amu Darya). The herd is derived from two animals introduced in 1953 and now numbers 42; they are readily seen by visitors. A herd of feral yaks lives in the sanctuary but unfortunately it has been much reduced by poaching. I only saw 26 on a recent visit where 70 were recorded in 1978.

The aim of management of the Ajar Valley will be to provide facilities and information for visitors and to set up an ecological monitoring program to follow trends in the populations of large mammals and evaluate their interaction with the vegetation. The study of the vegetation could provide information applicable to the over-exploited rangeland of the rest of Afghanistan. If wild animal populations build up to a level where they over-exploit the vegetation then the scientific value of the sanctuary would be diminished. A hunting program for tourists is therefore being proposed so as to maintain populations within the carrying capacity of the area. The ibex provide fine trophies and considerable revenue will derive from the sale of permits.

Of the three remaining sanctuaries two are wetland areas rich in waterfowl. One of these, Dashte Newar, is about 100 km west of Ab-i-Estada and is notable as being, at an elevation of 3,000 m, the highest breeding place of greater flamingos in the world. Management policy will be similar to that for Ab-i-Estada and here also the World Wildlife Fund is providing funds for warden and research facilities. The



The Ajar Valley in the Hindu Kush Mountains, a region of dramatic scenery, is now one of five wildlife reserves in Afghanistan. The area once contained a royal hunting reserve. It has a healthy population of ibex, some Bactrian deer and feral yak. This is Jawarzi Canyon in the Ajar Valley. Photo: Dr. Ronald Petocz

The yak, Bos grunniens, *is the principal domestic animal in the high country of Central Asia, providing transport, milk and hair for the sparse human populations. Photo: Dr. Ronald Petocz*

other area is a shallow lake in the suburbs of Kabul where a remarkable variety of birds can be seen. The lake has considerable potential for conservation education activities and provides a valuable recreational area for the people of the capital.

The final area, in absolute contrast, lies at 5,000 m and above in the Pamir mountains in the Wakhan Corridor. It is the home of the Marco Polo sheep (*Ovis ammon poli*), and the Siberian ibex (*Capra ibex sibericus*). A rugged and inaccessible area, it has the potential to be an outstanding national park. At present the Afghan Tourist Organization organizes hunting expeditions for overseas visitors. A permit for a Marco Polo sheep costs U.S.$12,000 and only 16 are issued each year.

The establishment of these five sanctuaries is a valuable start in the struggle to conserve wildlife and wild places in Afghanistan. The next stage will be to conduct an inventory of wildlife resources as a basis for a "National Strategy for Conservation." The long-term aim of this strategy will be to conserve not only outstanding or unique areas but also representative examples of ecosystems of the country. It will also aim at producing greater environmental awareness among the people in the hope that conservation will be a factor in development planning.

Jeffrey A. Sayer is Team Leader and Wildlife Ecologist for the FAO Wildlife Management Project in Afghanistan.

A similar report by Mr. Sayer appeared in Vol. VI, No. 2-3 of the FAO/UNEP "Tigerpaper."

I. Made Taman

Bali, a Cultural "Garden Island"

The island of Bali is well known everywhere in the world, not only because of its natural beauty, but also because of the customs and the traditional way of life of the people. Every activity of the Bali people is connected with the condition and beauty of the surrounding nature.

As a specific example I can mention that a Balinese always needs leaves, fruits and all kinds of fresh flowers for his rituals. For this purpose each family in Bali usually grows flowering plants near its home.

As a result, the temples and shrines which you find in Bali—there are more than 100,000—are always surrounded by shade trees and flowering shrubs. To the Balinese people, forests on the mountains and groups of trees growing around lakes are always considered as holy places. We have always held the view that forests and trees must be protected. For his daily needs, man is only allowed to collect fruits and some dry branches for firewood.

According to old belief and tradition, it was said that one who cut forests would be disturbed and attacked by invisible beings and ghosts which roam in the jungles.

This may be a primitive way of thinking but it still remains in the minds of the people from one generation to the next, and serves as a traditional influence to protect the forests against illegal deforestation.

The people know by experience that forests can have great influence on the flow of rivers. In the Bali society it is accepted that a giant tree (usually Ficus-species) which grows near a spring of water, a waterfall, a well or a lake, is a holy tree. The local people have such a great respect for the sacred tree that the villagers place a shrine against the tree, or close to it. This serves as a warning that no one is allowed to cut the tree or cause any kind of contamination to the water. In the minds of the Balinese people, a banyan tree (Ficus benjamina), especially, is a very respected tree because of its shape, the number and form of its aerial roots which are standing and hanging strongly around the big stem.

Besides respect to forests and big trees, the people of this often-called "enchanted island" regard some animal species (e.g. a tiger, a snake, a white starling and some groups of monkeys) as holy creatures. The villagers do not attack or kill a tiger or groups of monkeys which are living in a holy forest or near a temple, such as the respected groups in the Sangeh nature reserve some 25 km from Denpasar, or Pulaki temple, about 35 km from Singaraja.

Influenced by this belief in the important role of flora and fauna in the daily life of the people, most artists in Bali have received inspiration for their creative activities from plants and animals. Observe how sculptors, wood-carvers and painters use the forms and movements of flowers and animals in their work. Also in the different kinds of dances we see many movements and performances which imitate those of animal life. Everybody knows the very popular monkey dance, the gracious bee-dance and the rhythmic quick moving butterfly dance — all of which attract many tourists to Bali.

In order to conserve the natural beauty and to preserve the forests in this small island, the local government in the last few years has planned and made preparation to designate the island of Bali as a "garden island." This highly appreciated idea of the people has won full support from the central government in Jakarta, especially from the Bogor Botanical Garden (under the supervision of the Institute of Natural Sciences) and the Directorate of Conservation of Nature and Natural Resources. Consequently, in August 1978, a decision was made that Bali as a garden island will be a reality.

This most important step, taken by the provincial government, is extremely significant to protect the forests and nature reserves in the island from any destruction.

Much work and activities have to be done, including the following:

a. to preserve and to protect the existing forests.

b. to enlarge the forest area to 35% of the whole island (the present situation is ± 20%).

c. to maintain and to take care of the several nature reserves which are endangered with destruction.

d. to proclaim new areas as nature reserves and recreation parks in the neighborhood of different cities which attract many tourists.

e. to extend the planting of trees and shrubs in and outside temples and shrines.

Foreign tourists who are coming increasingly every year to Bali for the culture and dances of the island, also like to see and visit areas of untouched nature and wilderness, the active volcano, the lakes, the beaches and wild seashores. As mentioned above, the initiative of the Bali government to create a garden island is very acceptable and useful, to serve the people with the many kinds of materials they need for their religious activities, and enable the many artists to obtain the desired objects of carving and painting. Without the beautiful and colourful patterns in nature, such as mountains, forests, ravines, lakes, etc., the

Young dancers in Bali. The girl in the center is the author's granddaughter.

Lush gardens are characteristic of Bali. Left: a seashore house fronting on the Indian ocean. Right: Tree ferns on one of the Bedugal Lakes. Photos: Dr. George C. Ruhle

Balinese artists could not perform their skill.

Great emphasis must be placed on the fact that creating a garden island in Bali is not just a matter of landscaping; it includes much more than that. It has a much deeper meaning. It is aimed to preserve and maintain the people's religion and culture. It is up to the present generation and generations to come, to carry out this highly desired idea, for the people of Indonesia, for mankind and for science.

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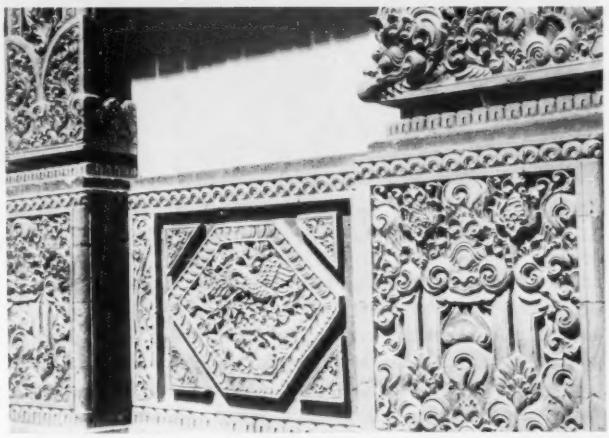

The forms and movements of flowers and animals are often reflected in wood and stone carvings produced by Balinese artists. Photo: Dr. George C. Ruhle

Robert E. Manning

"Going Light" — New Meaning for an Old Term

"One now goes light not in terms of weight but rather with respect to one's impact upon the land."

The 1960's and early 1970's saw the beginning of the great backpacking boom. Literally millions of people began to discover the joys of hiking and camping in the out-of-doors. This mass migration to the backcountry was the product of a variety of social forces, but was given a significant boost through the development of lightweight hiking and camping equipment. Prior to the 1960's backpacking equipment consisted primarily of surplus military gear, with wooden packframe, canvas tent, and heavy sleeping bag, all of which totaled forty pounds or more (much more when wet!). Technical innovations of the past decade made possible new lightweight equipment constructed of aluminum-zinc alloys, ripstop nylon, and synthetic insulators. Combined with freeze-dried food and down-filled beds and clothing, the weight on one's back could now be reduced to twenty pounds or less, making foot travel to the backcountry more attractive.

These technical innovations marked the beginning of a new era in backcountry recreations, popularly known as "going light." A multitude of how-to-do-it books appeared outlining the techniques of backcountry travel, the new equipment available, and where to find it. Every author preached the sermon of reducing the load, of eliminating every ounce not absolutely needed. A new generation of backpackers

Lighter weight equipment and supplies greatly extend the distance hikers can penetrate wilderness areas and contribute to substantial increases in back country use across a longer season. New problems for resource managers result. Photo: John Kauffman (Mt. McKinley National Park/USA).

adopted the slogan "Look after the ounces and the pounds will take care of themselves"; a sawed-off toothbrush was their calling card. The go-light culture probably reached its zenith under the tutelage to go-light advocate Colin Fletcher with the publication of his *The Complete Walker* in 1968. Devising new ways to reduce ounces or even fractions of an ounce became a game; many a pleasant evening was spent round the campfire playing go-light one-upmanship. Raisins that came in cardboard containers were repacked in plastic bags. Margins and other unused portions were trimmed from maps. One go-lighter has even admitted to tearing the labels off the tea bags!

The technology and techniques of going light have made the backcountry more enjoyable and accessible and have contributed significantly to the substantial increases in backcountry use. Unfortunately, this increase in use has resulted in considerable, and in some cases devastating, impact upon the backcountry. Resource managers and physical scientists have documented many of these impacts in the form of compacted and eroded soil, trampled vegetation, and water pollution. More recently behavioral scientists have become concerned over social impacts of increasing use on the backcountry experience. Crowding and conflicting uses have become an equal part of the impact problem. In response to these issues, a new movement has been developing among concerned elements of the backpacking public. "Going light" has again been used to describe this movement, but with a different meaning.* One now goes light not in terms of weight (though in most cases this is still a good idea), but rather with respect to one's impact upon the land. Again, a variety of technologies and techniques are combining to make significant advancements in this movement. A sampling of new go-light procedures demonstrates the many ways in which both physical and social impacts can be reduced.

Equipment

Probably the biggest equipment innovation in the new go-light arsenal is the compact, lightweight stove. Open campfires, once an integral part of the classic outdoor experience, have become a luxury we can no longer afford in much of the backcountry. Beyond the real forest fire hazard, campfires can sterilize the ground and result in aesthetically displeasing fire spots which may persist for decades. Campfires deplete the supply of down wood which, near timberline and in other environments with short growing seasons, may pose problems of nutrient loss and replacement. This is not to say that campfires can no longer be tolerated. Under proper circumstances, such as a developed campground, a lower elevation deciduous forest, or a tidal beach, open campfires may be perfectly harmless. The concerned "go-lighter," however, always packs a stove

Modern backpacking equipment opens the wilderness, even to family groups. Each member shares part of the load. Photo: Richard Frear (Isle Royale National Park/USA).

*"Low impact" camping, "clean camping," and "leave-no-trace" camping are other terms sometimes used to describe this movement.

Compact, lightweight stoves and equipment eliminate the need for open cooking fires and permit a major reduction of environmental impacts. Photos: J True and Gordon Banks

and uses it in situations where a campfire would be inappropriate. A variety of campstoves are now available weighing around one to two pounds and fueled by white gas, kerosene (paraffin), butane, alcohol, or a solid fuel such as "sterno."

The color of camping equipment such as tents, sleeping bags, and packs is beginning to cause concern among some backpackers. International orange and otherhigh-visibility colors are often justified on the basis of safety and search and rescue needs. However, if these colors can be easily seen by search parties, they are also highly visible and obtrusive to other campers. The overall affect of such equipment is to shrink the effective area of the backcountry thus reducing the relative opportunities for solitude. From a safety standpoint, a piece of highly colored cloth can always be carried for use as needed. John Hart of the Sierra Club has likened high-visibility tents and other equipment to "a light you can never turn off." Go-lighters take color into account when purchasing or making outdoor equipment.

Tents can have a severe impact on ground cover vegetation, though this impact can be considerably lessened by not camping in the same spot for more than one night. The number of tent stakes might also be kept to a minimum to reduce soil disturbance, and there are a number of free standing tents now on the market. Substitution of a hammock and covering tarp for a tent where appropriate has been suggested as an effective way to prevent damage to ground cover vegetation. Nylon webbing might be used in place of rope to avoid potential scarring or girdling of trees.

A hammock and covering tarp greatly reduce the impact of the camp site on ground cover vegetation. Photo: Bob Perry

Lug soled boots are another piece of standard backpacking equipment about which some rethinking has been done in recent years. Travel in steep, rugged, rocky terrain usually demands the gripping power provided by this type of boot. Our more common outings, however, in gentler country call for flat soled footwear (remember the sneaker!). The gripping power of lug soles simply hastens the process of trail erosion. Even when lug soles are needed on the trail, they are rarely advisable in camp. A pair of camp moccasins carried in the pack is a good practice for lightening the load on the land and the feet.

Along the Trail

Going light involves a newly developing set of trail ethics. Above all, when using a developed trail, one should stay on the trace or well-worn portion of the trail. Research has shown that there is often a tendency for trails to widen over time and thus expand the area exposed to environmental stress. Walking single file near the center of the trail, combined with good trail maintenance, will help ameliorate this problem. Shortcutting and other abbreviated wanderings off the trail are, of course, discouraged to avoid a multiple trailing effect.

Hiking cross-country presents an exception to the above rule of hiking single file. Here, walking abreast at least within arm's length apart is a better practice. One person hiking cross-country leaves little evidence of his passing. Two or more following the same path may leave sufficient evidence to entice others along the same route. Trails should never be marked when traveling cross-country. Blazing on living trees particularly should be banned.

In Camp

At the end of the day, the first important decision facing the overnight hiker is the choice of an appropriate campsite. When hiking in frequently used areas of backcountry, serious consideration should be given to using designated campsites or sites which show obvious signs of previous use (assuming that such sites are appropriately located). Here some damage to the resource has already taken place, and with only a little care and thoughtfulness, minimal additional impact is likely. Often some facilities will have been provided, such as tent pads or fire rings and these should be used to avoid extending or expanding the site.

More serious implications are involved in a decision to camp in an area which shows no signs of previous use. In this situation, the go-light philosophy dictates that the area be left in its pristine state. Considerable

Flat, soft-soled footwear rather than lug-soled hiking boots can slow the rate of trail erosion. If you don't need lug soles don't wear them. Photos: Gordon Banks and US NPS

care and application of good camping practices are needed to meet this objective. Site selection takes on great significance. Sites should be relatively flat for both comfort and resistance to erosion. Every effort should be made to avoid camping on vegetation, particularly fragile meadows and tundra (disregard those appealing but unwise equipment catalog photos). Forest duff or bare ground rock make the most desirable campsites. A foam pad or air mattress will more than make up the cushioning effect of ground cover vegetation. Preferred camp locations are away from watercourses, trails, and other camping parties. In this way areas will be avoided which may be ecologically sensitive or important to wildlife, and crowding will be reduced, thus preserving opportunities for some degree of solitude.

Setting up camp should involve no "site engineering" such as clearing brush, driving nails, building tables, or moving rocks and logs. When walking about the campsite, it is wise to use a variety of routes to avoid wearing paths which may persist after the site is vacated. Trips to the nearest water supply can be reduced by carrying collapsible plastic jugs in order to transport larger quantities of water. In any case, it will be much easier to eliminate all evidence of use if camping does not exceed a single night at any one site.

At both designated and pristine campsites, garbage and sanitation are matters that need special attention to avoid creating impact problems. The one effective way of handling garbage and refuse is to simply pack back out what is packed in. The only exceptions to this rule are paper and some plastics which may be burned. Burying garbage is not acceptable due to a number of likely adverse natural conditions such as shallow soil, soil erosion, scavenging wildlife, frost heave, and soil temperatures which may be too low for effective decomposition. Washing of clothes, body (including teeth), and dishes should be done with non-detergent, bio-degradable soap. Where sanitary facilities are not provided, human wastes should be disposed of by the individual "cat method." A six inch hole should be dug (at least 200 feet back from any steam or waterbody), wastes deposited in the hole, soil replaced.

Final Thoughts

The concept of going light has evolved from a series of technological innovations to a new philosophy of protection of the backcountry. The former provided a means for mass migration to the out-of-doors. The latter tempers that newly found accessability with a series of developing, specialized practices and procedures aimed at reducing man's impact on the land. But going light is more than good hiking and camping practices; it is as much a reflection of a new attitude on the part of concerned outdoorsmen toward responsibility to both man and land.

Resource managers have a stake in fostering the new go-light philosophy. Education is a powerful management tool—potentially more so than popular use restrictions and quotas. Our natural resource base is capable of supporting and sustaining enormous demands for quality outdoor recreation experiences. If misuse of these resources can be minimized, the spectre of overuse can be postponed appreciably. Researchers too have a role to play in developing sound outdoor recreation practices. Alternative ideas for go-light hiking and camping procedures would benefit from more rigorous testing to determine their relative merit and effectiveness. Minimum setbacks for campsites from waterbodies, for example, would be helpful to ensure protection of backcountry water supplies.

Two matters of caution should be raised at this point. First, discussion has centered around a number of procedures and practices that generally have been labeled "good." One should be advised that techniques to be applied in the out-of-doors are likely to vary from region to region, or from environment to environment. Differences of opinion are also likely among experts. However, the ideas presented above are felt to apply over a wide area and should prove valid in most circumstances. The attitude behind these ideas, in particular, should be applied universally. The second caution concerns land management agency rules and regulations. Many of the practices cited above are meant to be applied in dispersed backcountry situations; that is in areas where cross-country travel is permitted and camping is not restricted to designated sites. Some management agencies do not allow this type of usage on all or part of the land they administer. One should always check with management personnel in pre-trip planning for appropriate rules and regulations.

The new go-light philosophy of backcountry usage presents a challenge to outdoor recreationists. Careful and creative thought has started a new movement among the backpacking public. If the intensity and competitive atmosphere of the original go-light concept can be applied to the development of responsible outdoor recreation practices, significant benefits will accrue to both resource and user.

Readers with a further interest in go-light hiking and camping practices are referred to John Hart's recent book, *Walking Softly in the Wilderness*, (Sierra Club Books, San Francisco, 1978) from which many of the suggestions in this article have been drawn.

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Arthur Goldthorpe

Access Requirements for Disabled in National Parks

Advances in medicine and surgery over the last 50 years have given all of us a greater life expectancy, and a much higher standard of rehabilitation after major accidents and illnesses. Technological advances have resulted in better limb prostheses, better wheelchairs, electrically propelled wheelchairs and adaptations to automobiles so that even the most severely disabled person is able to attain a high degree of mobility and independence.

Unfortunately, in their efforts to lead a reasonably normal life disabled people are very often frustrated by environmental barriers which could have been avoided if planners and designers had shown a greater awareness of the problems of the disabled.

Because disabled people are necessarily restricted in their choice of leisure activities, it is even more important that they are able to enjoy the more relaxed exploration of national parks, historic sites and other protected areas.

Circulation Within Parks

The majority of disabled will travel by road and it is important that unimpeded circulation is possible. If gates or barriers are present these should be clearly indicated at a point where an alternative route is possible, and marked with the alternative route on maps of the area. Gates should be replaced by cattle grids wherever possible.

Reserved parking spaces for disabled should be located near restaurant and toilet facilities, and where a scenic view can be enjoyed without having to leave the vehicle. Where a major car park is sited without a reasonable view of the principal features, a small park for disabled could be arranged where the handicapped person may enjoy the air and scenery whilst more active companions explore on foot. Consideration could be given to allowing disabled people in vehicles to use roads not normally open to the public.

Wheelchairs and Walking Disabled

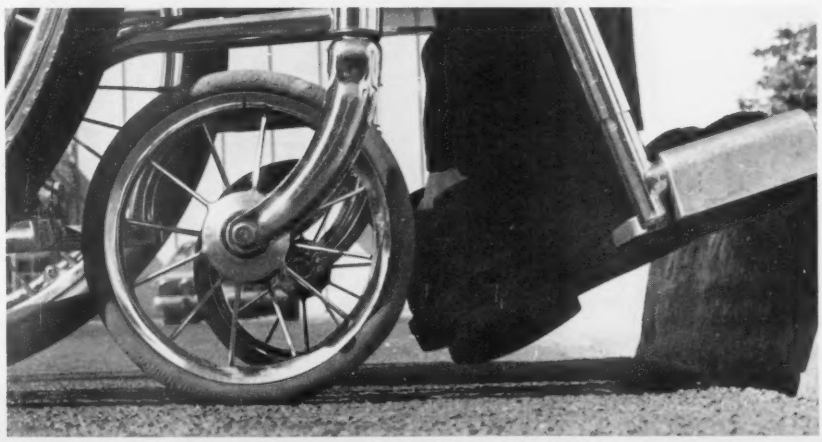
It is easy to appreciate some of the problems of the wheelchair users, but those who walk with sticks or crutches deserve more consideration than they usually receive. Ambulant disabled often have a very limited range before they need to rest. They find steep slopes very dangerous. Though many can manage a few steps there should be handrails at both sides, extended above and below the flight. This is not that each side will be used together—though this can be helpful if the distance between them is not too wide—but more to assist people who are recovering from a stroke who often have only one usable arm and will therefore need a different hand rail when ascending or descending.

Wheelchairs can be difficult to move on rough roads and tracks; gravel and soft sand or mud are almost prohibitive. A wheelchair with an active pusher may be able to negotiate one step or a small obstacle, but two steps generally need more help. It is to be expected that some disabled people will use electric wheelchairs and be unescorted and they will expect to be able to move around freely and independently. Good signposting of suitable routes is essential—and so is signposting of unsuitable routes.

Gates and stiles are prohibitive to wheelchairs; tree roots crossing paths can also obstruct. Care must be taken when placing barriers to prevent cars encroaching on picnic spaces that these have gaps at intervals which are wide enough to allow wheelchairs to come through.

It is usually acceptable to have a short, steepish ramp alongside a few steps if no gentler alternative is possible, and on long inclines level resting platforms should be incorporated at intervals. Inclined slopes of 15 to 1 are about right.

Many identified routes, such as nature trails, may prove too long for disabled, and shorter circuits which have been made easy for wheelchairs are welcome.



Barriers for handicapped people take many forms; e.g., curbs, steps, steep ramps, narrow corridors and doorways; rutted, muddy or gravelled walkways, inadequate turning room, and the improper placement of such ordinary facilities as drinking fountains, toilets and pay-telephones. Photo: Courage Center, Golden Valley, Minnesota, USA.

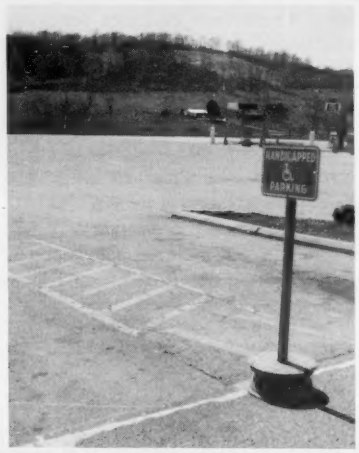
International Symbol of Access

This symbol tells a handicapped person, particularly one using a wheelchair, that the building or facility is accessible and can be entered and used without fear of being blocked by architectural barriers. It should be displayed only on those buidings intended for public use. Used throughout the world, the symbol is recognized for its special meaning.

In the UK, an orange disc is used to permit holders special auto parking concessions. Some similar badge or permit should be available for disabled people in all countries where private vehicles are used.

Right, Special car parks reserved for disabled persons are a basic need and should be provided. Good signage is essential, too. This clear and attractive sign is at Tarn Hows, a famous beauty spot in the English Lake District, Cumbria, maintained by the English National Trust. Photo: A. Goldthorpe

Far Right, Parking spaces should provide room for the disabled driver or passenger to position and enter a chair. This area is at a rest and service stop on the Pennsylvania Turnpike (USA). Photo: R. Standish



Smooth surfaces for walking or for wheelchairs are critically important. This boardwalk is at Fire Island National Seashore (New York). Photo: U.S. National Park Service

Access to observation points is particularly appreciated. Visitors in wheelchairs can enter or leave The Lodge Hide at Sandy in Bedfordshire without assistance. Photo: © Royal Society for the Protection of Birds

Urban parks, especially, should offer special recreational accommodations for handicapped visitors. Note the access ramp onto this bowling green at Dulwich Park, London. Photo: © Greater London Council.

Sporting Facilities

Fishing, photography and target shooting are popular among disabled. Reinforced edges on platforms or banks may be necessary to allow a wheelchair to the water's edge; piers and jetties make suitable access points for wheelchairs or ambulant disabled who will want to sit for fishing. Special fishing platforms overhanging the water have been built in some countries. Access to hides and observation points with parking nearby will benefit disabled photographers and shooters.

Toilet Facilities

The limiting factor for many disabled who are planning an excursion is the availability of a suitable toilet during the trip. Although extra wide cubicles with level access in men's and women's toilets are valuable, the ideal solution is one large 'unisex' toilet in which a husband and wife can go together if the disabled person needs assistance, without intruding on the privacy of the ladies or gents side.

If the toilets are locked (God forbid), as sometimes may be necessary, information should be clearly posted on where the key may be obtained.

Identification of Disabled

One problem of providing special parking areas, etc. for disabled is to prevent use by other people. In the U.K. an orange badge is issued to disabled persons (whether car drivers or passengers) and is displayed on the vehicle when carrying that person. This easily identifies those who are entitled to use the reserved areas, but where such a scheme does not exist it may be necessary to collect a suitable badge from the parks office to display on the vehicle. Such a badge could also be distributed from a central address on supplying suitable evidence of need, and be applicable to all national parks — statewise or nationally.

Arthur Goldthorpe is a British dental surgeon who has spent much of his active life in a wheelchair. He is Honorary Secretary for Access for the Disabled (Leeds) and Chairman of the Leeds Branch of the British Polio Fellowship. In 1978 he was honored for his work with disabled people, being named an Officer of the Order of the British Empire.

National Parks...a matter of survival

Sir Frank Fraser Darling

Sir Frank Fraser Darling died October 22, 1979, at the age of 76 in the county of Moray, Scotland. He was a pioneering ecologist and one of IUCN's leaders from its inception in 1948 until declining health forced his retirement in the early 1970's. Sir Frank left a rich legacy of scientific and philosophic writings on the world of nature and, of course, on national parks, a form of conservation which had a special interest for him. The following brief essay was written by Sir Frank for PARKS Magazine as an introduction for its first issue. We are honored to reprint it. —The Editor

It is inevitable that one's ideas change and develop and perhaps it is a matter for thankfulness that for one who has reached old age he has not quite reached the state of mental slumber, nor have his ideas ossified. My good fortune was to know many of the people who were early in the modern structure of the national park movement, men and women who developed the ideas which fired the pioneers of a century ago — and which fired me as a young man. How do I feel now in 1975? We are dealing with something much bigger than the pioneers could possibly have imagined and I also have a notion that some national parks spread about the world are being inspired by ideas not much in advance of those of a century ago. Such an opinion does not belittle them, but one does wonder at the length of time it takes for attitudes and knowledge to spread, despite two international national park conferences and the outstanding efforts of some individuals in education.

The philosophy of conservation, and the place the national park ideal has within this, have to do with human survival, a survival which is no vague matter in an indefinite future but of urgency within the coming century. The pioneers of the national park idea spoke of the parks as "pleasuring grounds" for the people. The parks are, of course, much more than that; they are areas of the planet's surface concerned with the survival of our species, physically because they are part of the world's respiratory system and part of the reservoir of living things other than man, but also because the parks will become increasingly significant in maintaining the psychological repose (call it sanity if you like) of the human being.

National parks, along with all the wildlife reserves and refuges throughout the world, are intimately concerned with that *physiology* of communities which means the functioning of living systems. We as an animal species have learned to buffer ourselves against many adverse aspects of the environment; our success in this has to some extent blinded us to the fact that we are just an animal species subject to the same laws of existence as any other living thing in the final analysis. I think the study of conservation in the near future will become more whole than in the past, when soil conservation and wildlife conservation were separate and sometimes at odds with each other, and human survival was taken for granted. We are, or should be, all together in this, reaching a philosophy of conservation which accepts the fact of interdependence of all living things, which no unselfish human being can ignore. There is nothing merely academic about conservation or its philosophy, nor is it what some politicians have chosen of late to call it, elitist, that word in itself being used in a mistaken sense.

I remember well the day when human ecology was virtually unrecognized. Ecology was thought to deal only with nature. Now, it is realized how little of nature is unaffected by the influence of man, and man and nature are not so far apart as they were thought to be as recently as 25 years ago. There is but one ecology and we as arbiters of the planet's future are the guardians of its denizens. The national park ideal is stretching into our own backyards and we are an inseparable part of the fauna.

PARK TECHNIQUES

Protecting Woodwork Without Preservatives

William C. Feist

Woodwork items such as window frames and sash are usually sold treated with a water-repellent preservative (WRP). This mixture contains a wax (or similar material) which provides water-repellency, preventing decay by slowing water absorption. A WRP also contains a small amount of preservative (often pentachlorophenol) to prevent decay.

The easiest way to prevent wood decay in such items is to simply protect the wood from excess moisture. Recent work at the Forest Products Laboratory, in Madison, Wisconsin, has shown that small amounts of wax *in the absence of preservative* can provide long-term protection to window units and other wood exposed above ground.

Twenty years ago, test window units were dipped for 3 minutes in either a solution of WRP or a water repellent (WR) without preservative. Some units were left untreated as comparison controls. All were tested as units of an exposed fence in Madison, Wisconsin. After only 6 years' exposure the untreated samples were so badly decayed that they fell apart as they were being removed from the test fence. Figure 1 shows a portion of the untreated window frame unit and the extensive decay found.

A closeup view of the WRP-treated window unit in Figure 2 shows how well this unit was protected against decay for 20 years. All test units were painted originally but never repainted. Most paint was gone from exposed surfaces after 10 to 12 years' exposure. The WRP treatment was very effective in protecting the window unit long after all the paint had weathered away.

But the most surprising result in the 20-year test was that shown in Figures 3 and 4. Window units treated with a simple water repellent (WR) containing 1.5 percent paraffin wax in mineral spirits plus 10 percent resin with no preservative, performed as well as did the WRP, which contained both wax and a preservative. This showed that a simple water repellent like paraffin wax with a small amount of resin or linseed oil added was capable of providing protection to wood exposed above ground to the elements for 20 years in a northern U.S. climate. These window units are still in test!

A water-repellent treatment alone can provide excellent decay resistance to outdoor woodwork, without the addition of a preservative, particularly in climates of low decay occurrence. This can represent a saving of money and resources, and judicious avoidance of potentially toxic preservatives in items such as sheds, porch and fence rails, and other above ground wood structures.

The water-repellent treatment is easily done before or after construction and before painting. A simple WR formula, easily prepared, is:

Exterior varnish	24 fl. oz.	1½ pints	710 mL
(or Boiled Linseed oil)	(12 fl. oz.)	(¾ pint)	(355 mL)
Paraffin wax	1 oz. by weight	1 oz. by weight	28 g
Mineral spirits or paint thinner or turpentine	add to make 128 fl. oz.	add to make 1 gallon	add to make 3785 mL

Figure 1. Closeup view of decayed untreated window unit frame. The window unit fell apart after 6 years' exposure.

Figure 2. Closeup view of water-repellent- preservative-protected window after 20 years' exposure. Condition of millwork is very good.

Figure 3. View of window unit protected for 20 years by dipping for 3 minutes in water repellent. Condition is as good as that with water repellent plus preservative.

Figure 4. Closeup view of water-repellent- protected window unit and frame after 20 years' exposure. Firm wood resists penetration by the knife blade.

Treatment is best done by dipping the wood for 1 to 3 minutes in the solution. If dipping is inconvenient, liberal brush application can be made, paying particular attention to heavy treatment of all board ends and joints. The treated surface can be painted after 2 or 3 days of warm drying weather. In fact, paint should last longer over the treated surface than over untreated wood.

Mixing

Melt the paraffin wax in the top unit of a double boiler or some other container heated by hot water. **Don't use a direct flame or heat near a flame such as the pilot light on a stove—the paraffin wax may ignite.**

The solvent (mineral spirits, paint thinner or turpentine) should be at room temperature (60° to 80°F) before mixing. While vigorously stirring the solvent, slowly pour in the melted paraffin. After the paraffin wax and solvent are mixed, add the linseed oil or varnish. Stir until the mixture is uniform.

The ingredients may separate if the solution is stored at low or freezing temperatures. If this happens, warm the solution to room temperature and stir to redissolve the ingredients.

Safety First

In mixing and applying WR (or WRP) care should always be exercised. **The safest place to do the mixing is outdoors.** The solutions are volatile, flammable mixtures. Don't breathe their vapors or expose them to flame or sparks. It is wise to wear protective clothing on the hands and arms and to take care that the solution is not splashed in the eyes or on the face.

Dr. William C. Feist is a research chemist with the U.S. Forest Service, U.S. Department of Agriculture. The experiments described were carried out by the Forest Products Laboratory, P.O. Box 5130, Madison, Wisconsin 53705, USA. The Laboratory is maintained in cooperation with the University of Wisconsin. (For additional information on water repellents and water-repellent preservatives, contact the Forest Products Laboratory and request Research Note FPL-0124.)

Good Idea

Samples of ten major species of commercially valuable trees are displayed in this simple but effective way at the U.S. Forest Service Visitor Center in Watersmeet, Michigan. Data about each species is printed on cards tacked to the sample. Photo: R. Standish

Abbot's Wood, A Forest Walk for Handicapped People

K. E. Godley

Abbot's Wood is one of a number of woodland areas grouped closely together to form Wilmington Forest, some 356 ha in extent, and is situated in Cuckmere Valley between the seaside resort of Eastbourne and the small market town of Hailsham, in the county of East Sussex, England. It is in some of the most beautiful countryside of the county, the rolling hills of the South Downs being less than two miles to the south, forming part of the coastline and terminating in the high, steep headland of Beachy Head which juts out into the English Channel. About a quarter of the wood is broadleaved trees, chiefly oak, and the remainder carries conifers which are mainly Corsican pine and Norway spruce. There is an ancient lake where, in bygone days, fish were stocked for the tables of the holy men at nearby Michelham Priory, founded in 1229 for Augustinian Canons, from whom the wood takes its name.

Abbot's Wood is the property of the Forestry Commission, the authority responsible for implementing government policies on forestry matters. The Commission encourages the public to visit, get to know and enjoy their areas and has issued literature giving locations and information of the various facilities available.

Unfortunately, the chance for the elderly, infirm or handicapped to take advantage of these opportunities is all too frequently limited —nowhere to park a car or coach, steps or steep slopes which are not possible to negotiate, surfaces too rough or muddy and inadequate toilet facilities. Even when all else is satisfactory the handicapped person is made to feel uncomfortable by being set apart.

In Abbot's Wood the Forestry Commission decided to overcome such problems and give these people the pleasure to experience at firsthand the sights and sounds of the wooded countryside and learn something of the forest and nature.

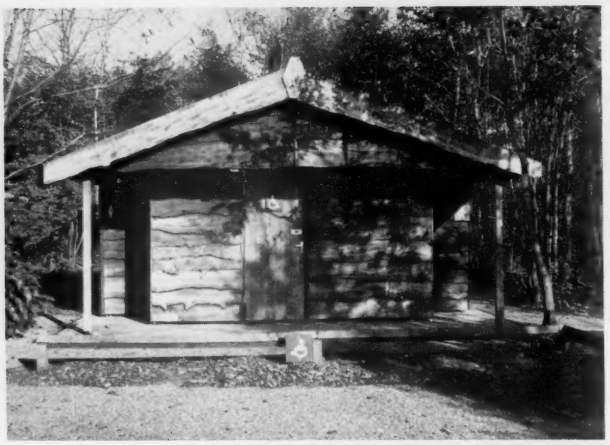
The county associations for the blind and for the disabled were approached and invited to give suggestions and comments. An area of the wood was selected and a new walk known as Placket Walk, named after Placket Coppice through which it winds, was constructed. It goes for a distance of 425 yards (388.6 m), is closely integrated with the main forest walk and follows the same route part of the way through grassy glades among the trees. It is level and suitably surfaced for the use of wheelchairs with seats and tables set at regular intervals for those who wish to rest awhile or have a picnic. Trees having distinctive textures or aromas were given by Clubs of the Blind and are planted at places along the walk. A small tree-planting ceremony took place before the official opening.

Signs at roadside on each side of the entrance to Abbot's Wood give information on facilities and indicate by symbol there is access for disabled people.

Part of Placket Walk showing surfaced path, seat, information board, picnic table and seats, woodland and grassy area.

Information board, picnic table with room at each end for wheelchair.

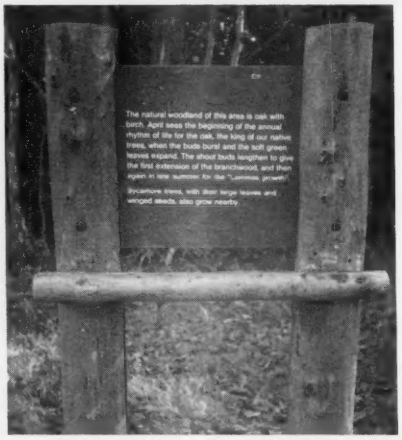
Notice near commencement of Placket Walk showing special facilities for parking for disabled people's vehicles.



Timbered toilet block is specially provided for disabled people. Sited near parking area and commencement of Placket Walk with symbol of accessibility.

Sign leading to parking areas and toilets, indicating access for disabled people.

Welcome/introduction/information board sited at commencement of Placket Walk.



Information boards found along Placket Walk give particulars of some of the flora and fauna in Abbot's Wood.

Information boards have been installed telling of some of the things of interest in the forest. A timbered toilet block has been constructed adjoining a parking area reserved for disabled people's vehicles and the start of the walk. The entrances to the toilets are free from steps and ramps and inside there is ample room for wheelchairs to maneuver and easy access to facilities.

On 5th June, 1979, Placket Walk was officially opened by Alfred Morris, Member of Parliament and former Minister for Disabled. In the past many people have been able to enjoy the sights and sounds of Abbot's Wood. In the future the number will be increased now that the elderly and handicapped can also experience the pleasures of being in the forest.

K. E. Godley is Organising Secretary of the East Sussex Association for the Disabled. He resides in Hailsham, East Sussex, England.

Paving Blocks Cure Edge Rutting *Gary Everhardt*

The Blue Ridge Parkway in the USA is a narrow Park 469 miles (755 km) long connecting the Shenandoah National Park in Virginia and the Great Smoky Mountains National Park in Tennessee. This scenic road which winds through the southern Appalachian Mountains attracted more than 16 million visitors in 1979. Such intensive use brings numerous problems, especially to the Parkway Maintenance Division.

One serious problem over the years has been the rutting of the road shoulders and the erosion of soils adjacent to the Parkway caused by off-road parking. The shoulder rutting has been not only a safety problem but also a serious visual distraction. The compacted, eroded and rutted grounds adjacent to the Parkway were also disturbing eyesores.

Attempts to solve the shoulder rutting problem with generous amounts of gravel were not successful. Paving the rutted areas with asphalt solved the safety problem but created an equally unacceptable visual scar as the bulging patches, too, were eyesores.

Warning signs, large boulders and fences were tried in an attempt to restrict or prohibit visitors from parking adjacent to the Parkway on grassed areas. This was a negative approach and quite unsatisfactory in situations where visitors should be allowed normal use of the Parkway roadsides.

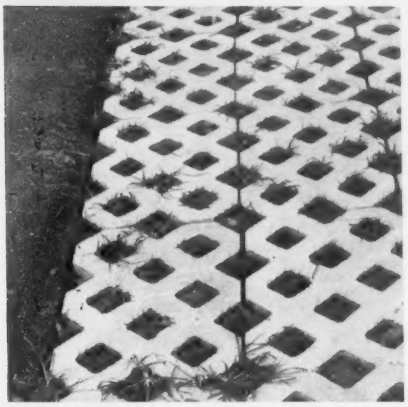
Searching for a solution that would produce positive results in terms of safety, visitor use, and scenic enhancement led the Maintenance Division to a commercially-produced multipurpose paving stone or block made of Portland cement, graded stone and sand. Its high compressive strength, which ranges from 6,000 to 8,000 pounds per square inch (about 422 to 562 kg per cm^2), makes it suitable to support vehicular loadings, either moving or stopped, even in wet soil conditions.

The paving stone has the appearance of decorative patio block. The stone has 8 open spaces or cells. Its dimensions are 15⅝ inches wide by 23⅝ inches long by 3½ inches thick (about 90 mm x 410 mm x 510 mm); it weighs approximately 65 pounds (29½ kg).

As the photographs indicate, grass planted in the stones' open cells gives the installation a natural appearance which blends with adjacent grassed areas.

The use of these paving stones for the construction of small roadside parking areas has been very successful. The stone adequately supports the loading of all parked vehicles, and the grass growing from their open spaces camouflages the stone. Rutting and erosion is completely eliminated. In addition the Parkway standard of having lush grass shoulders to the edge of the asphalt pavement is completely satisfied.

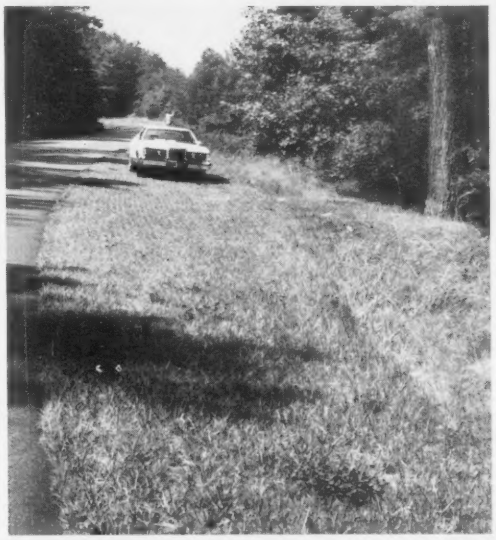
Common roadside problems: erosion, broken pavement, ruts and visual scars.



Topsoil with grass seed or turf fills the hollow spaces.

The cure: paving blocks laid down on a base of crushed stone, compacted subsoil and a layer of sand.

A roadside parking area one year after installation. Healthy grass anchors each paving stone and blends the surfaced area with the adjacent grassed roadside.



Shoulder and pavement edge protection is immediate.

Edge Rutting cured

As mentioned earlier, the edge rutting along the parkway has been a continual nuisance over the years. This rutting normally occurred on inside curves and was caused by camper trailers and similar recreational vehicles. The ruts generally were one or two tire widths wide and from 3 to 6 inches (7 to 15 cm) deep. In order to reduce the obvious hazard, gravel would be added to the rut. Eventually, however, the gravel would be displaced onto the pavement and two hazards were created, the rut itself and loose gravel on the pavement. Placing a hot asphalt mix in the ruts proved to be a temporary solution also, as rutting soon appeared on the edge of the patch. It seems drivers favor the right-hand edge of the pavement, so no matter how wide you make the pavement, rutting will still occur. Then too the configuration of the pavement edge is seriously distorted, with unsightly and objectionable bulges. Installing a course of these paving stones immediately adjacent to the pavement, including the necessary grass seeding, accomplished three things: (1) the blocks provided a strong shoulder support to the pavement; (2) the rutting with subsequent grass-edge destruction was completely eliminated; and (3) an excellent, protected bed for grass was provided.

The Parkway is looking at many other potential uses for the paving stones including stabilization of drainage ditches and slopes; surfacing service driveways in small storage areas and bicycle paths.

Additional information can be requested from the Superintendent, Blue Ridge Parkway, 700 Northwestern Bank Building, Asheville, N.C. 28801/USA.

Gary Everhardt is Superintendent of Blue Ridge Parkway. Previously he served as Director of the National Park Service, and as Superintendent of Grand Teton National Park.

All photos: Jane Sutton

Design Standards for Access

As a service to our readers we print below a summary of the present U.S. barrier-free design standards, the American National Standard Institute (ANSI) A 117.1-1961 (R 1971) *Standards for Making Buildings & Facilities Accessible to and Usable by the Physically Handicapped.*

Detailed standards for barrier-free design may vary country-to-country, but the basic philosophy, or the ideas behind the designs, should be the same everywhere.

The Standards summarized here are currently being studied for revision. Due consideration will be given to (ANSI) A 117.1-1979.

When published, the new Federal Standards will reflect minimum guidelines issued by the Architectural and Transportation Barriers Compliance Board, Room 1004, 330 C Street, S.W., Washington, D.C. 20201/USA.

The following standards are geared to four relatively fixed design conditions—the man or woman in a wheelchair, the person on crutches, the blind person, and the hearing-impaired person.

Parking and Approaches to Building Entrance

Parking. Place near building. Identify spaces for use by handicapped only. Make level. Minimum width 12 ft. (360 cm). Clear step-free route from reserved space to building entrance.

Walkways. 5 feet (150 cm) minimum width, 1 foot in 20 (30 cm in 600) maximum gradient. Non-slip surface. Curb cuts if road crossing required. No downspouts discharging onto walkway. Change in paving texture to alert visually impaired, especially when there are ramps or curb cuts.

Ramps. 1 foot in 12 (30 cm in 360) maximum slope. Handrail on at least one side 32 inches (80 cm) beyond top and bottom of ramp. Non-slip surface, 6 feet (180 cm) of straight clearance at top and bottom. Level rest platform at 30-foot (900 cm) intervals and at turns.

Entrance. At least one primary entrance barrier-free, with access to an elevator. 32 inches (80 cm) *clear* door opening. Door sill flush with floor. If vestibule, 6 feet 6 inches (195 cm) between doors. Adequate night illumination.

Stairs (Exterior). No protruding nosings. Non-skid surface. Lighted for night use. Handrails 32 inches (80 cm) high, to extend 30 inches (75 cm) horizontally at top and bottom.

Movement Within Building

Stairs. No protruding nosings. 7 inches (17.5 cm) maximum riser height. Handrails 32 inches (80 cm) beyond tread at face of riser, extend 12 inches (30 cm) beyond top and bottom, parallel to floor. Handrails circular or oval, 1¾ to 2 inches (4.4 to 5 cm) thick.

Elevators. Install in all buildings of two or more stories. Minimum cab size 5 feet (150 cm) deep by 5 feet 6 inches (165 cm) wide. Doors to have safety edge with sensing device. Control panel placed 4 feet (120 cm) from floor. Control buttons to have raised or notched information adjacent to buttons.

Corridors. 5 feet (150 cm) minimum.

Floors. Non-slip surface. Differences of level connected by ramps.

Services

Toilets. Stall size 3 feet (90 cm) wide by 5 feet (150 cm) deep minimum with an outswinging door providing 32 inches (80 cm) clearance. Toilet wall-mounted. Grab bars 1½ inches (3.79 cm) in diameter and 1½ inches (3.79 cm) from walls, placed on both walls, 33 inches (82.5 cm) from floor.

Lavatory. Clearance to bottom of apron 2 feet 6 inches (75 cm) minimum. Faucet handles easy to operate. Shield hot water line and trap. Mirror and other accessories not over 40 inches (100 cm) above floor.

Urinals. Wall-mounted fixtures should have openings no more than 19 inches (48 cm) from the floor. Floor mounted urinals with floor-level openings are okay.

Water fountains. Upper edge of basin not over 3 feet (90 cm) above floor. Controls and spouts at front. If recessed, recess not less than 3 feet (90 cm) wide.

Coin phones. Do not place phone in booths. Dial, coin slot, and headset placed so that they can be reached from wheelchair. Provide amplification for persons with hearing disabilities.

Controls. Light and other switches placed within reach of persons in wheelchairs.

Hazards

Obstructions. Low hanging door closers, signs, ceiling fixtures, etc. should be avoided.

Alarms. Visual signal to alert hearing impaired. Audible signal to alert visually impaired.

Dusting Paintings

The question of the desirability of routine housekeeping for oil paintings, such as dusting of paintings and frames, is brought to our attention from time to time. In the rare instances of which we know that this procedure was followed, we have found that considerable damage has resulted, particularly where gilt gesso frames were concerned.

Normally, natural deterioration is a very slow but steady process that eventually breaks down the cohesiveness of structures. This is followed by lifting or cleavage of gilt, gilt gesso or paint from the support. This stage of deterioration is very difficult to see with the naked eye. When a cloth or a feather duster are passed over such a surface, the threads of the cloth, or the barbs of the feathers, may snag on the lifted gilt, or paint, and pull it away from the support.

If you must clean, make absolutely sure that the surface is stable. If you have doubts, don't clean. If losses already exist, don't clean because this is a sure sign of weakness.

— Walter Nitkiewicz from "Conserve-o-grams," USNPS Division of Museum Services.

Resource Management

In fragile areas, where visitor use is heavy, steps should be taken to minimize foot traffic damage.

Access to a bathing beach across sand dunes presents a typical problem. The solution is not difficult: traffic is simply confined to the pathway by rails or fences. Two examples from Australia are pictured here. The wire fence probably should be reserved for extreme cases.

In areas of moderate to heavy rainfall, measures against water erosion no doubt would be necessary on sloping pathways such as these. Photos: R. Noonan, Soil Conservation Authority, Victoria, Australia.

IUFRO/MAB Conference: Research on Multiple-Use of Forest Resources

The International Union of Forestry Research Organizations and the Man and Biosphere Program are sponsoring a Multiple-Use Research Conference under the leadership of IUFRO working party S1.05.06 at Flagstaff, Arizona (USA) from May 18 to May 26, 1980. The purpose of the conference is to review the status of research of multiple-use. This will be done by examining four areas: (1) research techniques for developing multiple-use information, (2) status and progress of multiple-use research, (3) application of multiple-use research, and (4) cost/benefits of practicing multiple-use. Conference language will be English.

The Conference is intended for scientists actively engaged in research and is not for resources managers.

A layer of small stones or gravel 6 to 8 inches (15 to 20 cm) deep around the base of trees in grassed picnic areas can greatly simplify the job of mowing the lawn. Since grass and weed growth is restrained by the stones, close trimming is usually not needed and the risk of machinery damage to the trees is minimized. Photo: R. Standish

Protecting fragile soils and plant covers against the killing damage that can result from feet and wheels must always rank high on the resource manager's list of duties. In this Czechoslovakian state nature reserve, a lake marsh, visitors are required to use this rough walkway of split sapplings to reach the observation tower. This saves not only the soils and plants, but the muddying of boots as well. Photo: Dr. Jan Čeřovský

BOOKS & NOTICES

Archaeological Resource Management in Australia and Oceania. 1979. Edited by J. R. McKinlay & K. L. Jones. Published by and available from New Zealand Historic Places Trust, P.O. Box 12255, Wellington, New Zealand. 112 p., NZ$7.50

These are papers from Section 25A of the 49th Congress of the Australasian Association for the Advancement of Science, held in Auckland, New Zealand, January 1979.

M. B. Schiffer introduces the volume with an overview of archaeological resource management in the United States. Other groups of papers cover site registers and site surveying in Australia, New Zealand, Papua New Guinea and the Solomon Islands; and site management in Australia and New Zealand. Papers by Josephine Flood (Australian Heritage Commission) on tourism and archaeological sites, K. A. Sutcliffe on Queensland's archaeological services, and John Coster on the New Zealand Forest Service's site surveying and management program should be of interest to a wide readership.

A discussion chaired by D. J. Mulvaney covers the confidentiality of site records, and the prospects for archaeological research in resource management organizations.

Historic Preservation Bibliography. 1979. Robert E. Haynes, Heritage Conservation and Recreation Service, Department of the Interior. For sale by Superindentent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock Number 024-016-00113-3, priced at $1.75 plus 25% for foreign postage; 23 pages plus index and order forms.

The Heritage Conservation and Recreation Service believes that one of the most effective ways to inform the public about its historic preservation program is through its publications.

These publications provide technical assistance and guidance to states and localities for managing their cultural resources and developing their historic preservation programs, and they assist federal U.S. agencies in the compliance with historic preservation mandates. Some publications provide the general public with information about American historic, architectural, and archeological resources and increase general awareness and encourage public concern for historic preservation.

Publications cover documentation within a number of extensive programs, including the Historic American Buildings Survey, Historic American Engineering Record, Historic Sites Survey, National Register of Historic Places, Interagency Archeological Services and Technical Preservation Services.

A limited number of copies have been set aside for free distribution to readers of PARKS. Requests should be directed to: Heritage Conservation and Recreation Service, Department of the Interior, Pension Building, 440 G Street, N.W., Washington, D.C. 20243/USA

Wildlife Reference Handbooks. Revised editions of Handbooks 2 and 3, now published as two separate handbooks, are now available from the African Wildlife Leadership Foundation, P.O. Box 48177, Nairobi, Kenya. These handbooks are part of a series on techniques in African wildlife ecology designed for Wildlife Department and National Parks personnel and for students involved in wildlife management.

Handbook 2, "Measuring the Distribution of Animals in Relation to the Environment" by D. Western and J. J. R. Grimsdell, concerns the methods of relating large mammals to the main environmental features which affect their distribution. These include food, water, shade, predators and competitors, which can be recorded using both aerial and ground techniques.

Handbook 3, "Studying Predators" by B. Bertram, outlines methods of estimating the numbers, population dynamics, feeding ecology, movements and capture techniques for various large predators.

Persons interested in ordering these handbooks or other AWLF publications should write to the AWLF Nairobi office for the current price list and postage information. All orders are payable in advance.

15th International Seminar on National Parks and Equivalent Reserves

The 15th International Seminar on National Parks and Equivalent Reserves will be held August 3 to September 2, 1980. The Seminar is offered by The School of Natural Resources, University of Michigan; The National Park Service, U.S. Department of the Interior, U.S.A.; and Parks Canada, Department of the Environment, Canada. It is designed for senior administrators, professional personnel and conservation leaders responsible for the establishment and management of park and wildlife conservation systems and associated tourist programs. The Seminar language is English.

Since 1965, this Seminar has been attended by 459 park executives and conservation leaders from 88 countries.

Objectives and Policies: The purpose of the International Seminar is to examine policies, administration, planning and other aspects of management of national parks and equivalent reserves. Primary emphasis will focus on natural areas, with secondary emphasis on cultural resources. The human impact on park resources and methods to cope with the resultant problems will be given special consideration.

Location: The seminar will begin in the city of Calgary, Alberta, Canada. Discussions, field demonstrations and exercises, site evaluations and academic instruction will be concentrated in five geographic locations: the Banff-Jasper region of Alberta, the Vancouver region of Western Canada, the Olympic Peninsula region of the northwest United States, the Island of Hawaii in the Hawaiian Islands, and the Grand Canyon-Tucson-Phoenix region of the southwestern United States. The seminar will conclude in Phoenix, Arizona.

Seminar Fees: The seminar is operated on an actual cost basis. Registration and tuition fees, materials, meals, lodging (based on double occupancy) and Seminar travel will be approximately U.S.$2,000.00. Personal expenses according to individual preference are additional, as are travel costs to and from the Seminar. None of the sponsoring organizations offers grants or scholarships for the Seminar.

Enrollment in the Seminar is limited to thirty-six (36) participants. We recommend that you send your application prior to March 1, 1980. Applicants accepted for admission will be sent registration information and material. Interested persons should direct air mail inquiries and applications to:

Tom D. Thomas, Director
International Seminar on National Parks and Equivalent Reserves
School of Natural Resources
The University of Michigan
Ann Arbor, Michigan 48109/U.S.A.

Excess moisture hastens the process of decay in exposed woodwork items such as window frames and sash, and in many areas of the world this is responsible for high maintenance and replacement costs. The easiest way to prevent wood decay and subsequent losses is simply to protect the wood from excess moisture, as illustrated on this test fence at Madison, Wisconsin/USA. Untreated window frames, in the foreground, are cracked, decayed and disintegrating. Window units in the background, treated with wax, or wax and a chemical preservative such as pentachlorophenol, are still in good condition after years of exposure.

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